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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,607	08/21/2003	Lingyi A. Zheng	108298717US	2264

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EXAMINER	
DHINGRA, RAKESH KUMAR	
ART UNIT	**PAPER NUMBER**
1763	

DATE MAILED: 08/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/646,607	ZHENG ET AL.	
	Examiner	Art Unit	
	Rakesh K. Dhingra	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43 and 53-57* is/are pending in the application.

4a) Of the above claim(s) *See Continuation Sheet* is/are withdrawn from consideration.

5)☒ Claim(s) *53-57* is/are allowed.

6)☒ Claim(s) *1-4,6,7,9-15,18,20-23 and 25-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims withdrawn from consideration are 5,8,16,17,19,24,28-43.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 6/21/06 have been fully considered but they are not persuasive as explained hereunder.

102 (b) Rejections - Claims 1-3, 9-15, 18, 20, 21 and 27

1) Regarding claim 1 applicant argues that Bay et al reference does not teach that longitudinally extending gas delivery conduit is carried by the longitudinally extending member.

Examiner responds that Bay et al teaches gas injection tubes 18,19 held with (carried by) the slotted rails 29a-d (longitudinally extending member) [through interconnected parts like end plates 33, 35 and gas distribution discs 14a-n]. Bay et al further teaches that gas injector tube is built into the body of substrate carrier {which would include the slotted rails 29a-d (longitudinally extending members)} [column 2, lines 50-55]. Bay et al also teach that underside of substrate carriers 12a-n houses gas injection tubes 18, 19 that run along the entire length of substrate carriers 12a-n. The term "carried by" has been given broadest reasonable interpretation (MPEP. 2111). In view of above Bay et al teach all limitations of claim 1.

Accordingly rejection of claim 1 and claims 2, 3, 9 -15, 18, 21 and 27 under 35 USC 102 (b) is maintained as explained below.

103 (a) Rejections – Claims 4, 6, 7, 22, 23, 25 and 26

Applicant argues that Bay et al and Kwag et al fail to teach longitudinally extending gas delivery conduit is carried by the longitudinally extending member and there is no motivation for such a combination.

Examiner responds that as explained above, rejection of claim 1 is maintained since Bay et al teaches all limitations of the claim. Further, Kwag et al teaches limitation of dependent claim 4 that is, plurality of injection gas pipes 120 (Figure 6) for increased film deposition rate and better uniformity for large diameter substrates, which provides the motivation. Similarly Bay et al and Kwag et al also teach limitation of claim 22 as explained below. Thus rejection of claims 4, 6, 7, 22, 23, 25, 26 under 35 USC 103 (a) is maintained.

New claims 53-57

These claims are indicated as allowable subject matter as explained below.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 9-15, 18, 20, 21, 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Bay et al (US Patent No. 5,020,476).

Regarding Claims 1-3,11-15,18, 27: Bay et al teach substrate carrier or boat (microfeature work-piece holder) 12a-n {Figures 3A, 3B, 4,11} adapted to hold a

plurality of substrates (microfeature work-pieces) 20a-n for chemical processing, comprising:

a plurality of slotted rails (longitudinally extending members) 29a-d having a plurality of slots (work-piece supports) 62a-n spaced longitudinally along a length of the longitudinally extending members 29a-d, the workpiece supports being adapted to support the plurality of substrates (microfeature workpieces) 20a-n in a spaced-apart relationship for processing, and

longitudinally extending gas delivery conduits 18, 19 held by (carried by – broadest reasonable interpretation given as per MPEP. 2111) the slotted rails (longitudinally extending members) 29a-d {through connected parts like end plates 33, 35 and gas distribution discs 14a-n} and having a front and rear manifold link fixtures (gas inlet) 16, 17, plurality of gas outlets (through cross-links) 28 spaced longitudinally from the first outlet, the first outlet being positioned to direct a process gas flow intermediate a first pair of the work piece supports 62a-n, the second outlet being positioned to direct a process gas flow intermediate a second pair of the work piece supports 62a-n (Column 4, line 20 to Column 6, line 40).

Regarding Claims 9, 20: Bay et al teach that a process gas supply 36 is releasably coupled to the front manifold inlet fixture 16 through fitting 38 [Column 5, lines 30-45].

Regarding Claims 10, 21: Bay et al teach that the each of the gas outlets is positioned to direct a process gas flow inwardly toward a center of one of the plurality of substrates (microfeature workpieces) 20a-n when the substrates (microfeature workpieces) are

loaded in the boats (microfeature workpiece holder) 12a-n (Figure 4 and Column 5, lines 50-68).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4, 6, 7, 22, 23, 25, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bay et al (US Patent No. 5,020,476) in view of Kwag et al (US Patent No. 6,402,849).

Regarding Claim 4: Bay et al teach all limitations of the claim including plural slotted rails (longitudinally extending members) 29a-d and a gas conduit 19, but do not teach second gas delivery conduit.

Kwag et al teach an apparatus (Figures 1-8) that has a plasma process tube 100 having plural gas injection pipes 120 (gas conduits) with three (plural) gas injection portions 150 (Figure 6 and Column 4, line 10 to Column 7, line 50).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use plural second (plural) gas delivery conduits as taught by Kwag et al in the apparatus of Bay et al to provide increased film deposition rate and better uniformity for large diameter substrates (Column 5, lines 25-35).

Regarding Claims 6, 7: Kwag et al teach that gas injection pipes (gas delivery conduits) 120 and buffer gas pipe 130 comprise internal passages internal lumen) 140 of the longitudinally extending members (Column 5, lines 5-15).

Regarding Claims 22, 23: Bay et al in view of Kwag et al teach all limitations of the claim (as explained above) including that first and second members 29a, 29b are joined by end plates (cross-members) 33, 35 (Bay et al – Figure 4 and Column 5, lines 1-10).

Regarding Claim 25: Bay et al teach that a process gas supply 36 is releasably coupled to the front manifold inlet fixture 16 through fitting 38 [Column 5, lines 30-45].

Regarding Claim 26: Bay et al teach that the each of the gas outlets is positioned to direct a process gas flow inwardly toward a center of one of the plurality of substrates (microfeature workpieces) 20a-n when the substrates (microfeature workpieces) are loaded in the boats (microfeature workpiece holder) 12a-n (Figure 4 and Column 5, lines 50-68).

Allowable Subject Matter

Claim 53 allowed since prior art does not teach claim limitation, interalia,

"a longitudinally extending gas delivery conduit internal to the longitudinally extending member and having an inlet, a first outlet, and a second outlet spaced longitudinally from the first outlet, the first outlet being positioned to transversely flow a process gas intermediate a first pair of the work piece supports, the second outlet being positioned to flow a process gas transversely flow intermediate a second pair of the work piece supports".

Claims 54-57 allowed being dependent upon claim 53.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Bayne et al (US patent No. 4,911,638) teach an apparatus (Figures 1-6) that includes a diffusion capsule (longitudinally extending member) 16 with a plurality of workpiece supports for supporting wafers 20 and a gas injector tube (longitudinally extending gas delivery conduit) 28 that is carried by the diffusion capsule 16.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rakesh Dhingra

Parviz Hassanzadeh
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Art Unit 1763